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Promoting Breast Cancer Screening Among Asian American Women: the Asian Grocery Store-Based Cancer Education Program

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Abstract

Asian American women's historically low breast cancer mortality rate has remained constant as rates decreased for all other races. From 2000 to 2004, a randomized controlled trial explored the Asian grocery store-based breast cancer education program's impact on Chinese, Filipino, Korean, and Vietnamese women ($n=1,540$). Women aged 40 and older and non-adherent for annual screening mammograms were more likely to schedule a mammogram after receiving the breast cancer education program than women randomized to the prostate cancer program ($X^2=3.85$, $p=0.05$). With the right program ingredients, late adopters of breast cancer screening can be prompted to change.

Keywords

Breast cancer; Asian grocery stores; Asian American; Chinese; Filipino; Korean; Vietnamese

Introduction

Breast cancer is the most prevalent form of cancer among women in the USA. During 1988–2002, the breast cancer incidence rate among Asian American women increased from 77.7 to 92.9 per 100,000, while the incidence rate decreased when all women were considered together (from 135.5 to 126.7 per 100,000). Mortality rates among Asian American women during that same period increased slightly, from 14.0 to 14.7 per 100,000 [3], while the rate among women of all races combined decreased from 32.4 to 23.2 per 100,000 [3]. Other studies have linked increasing breast cancer incidence with Asian Americans' progressive westernized acculturation, concluding that incidence will increase further [3–5, 8]. Meanwhile, recent data show that the percentage of Asian American women aged 40 or older who received a mammogram within the past year was 39.7 and 54.2 % for those who received a mammogram within the past 2 years [2]. The likelihood that breast cancer incidence will increase among Asian American women combined with the documented, low screening rates that are known to correlate with later stage detection and hence increased morbidity foreshadows the likelihood that future breast cancer morbidity rates will increase among Asian American women [13].

Since the beginning of the Asian Grocery Store-Based Cancer Education Outreach Program, demonstration projects had suggested that the educational program was helping to educate Chinese, Filipino, Korean, and Vietnamese communities about breast cancer screening and screening guidelines [10–12, 14–19]. This study used a randomized controlled trial to evaluate the effectiveness of the outreach program from 2000 to 2004. This study hypothesizes that women who received information about breast cancer (breast cancer arm) will be more likely to adhere to current breast cancer screening guidelines between baseline and follow-up than those who received information about prostate cancer (prostate cancer arm).

Materials and Methods

The Educational Intervention

The Asian Grocery Store-Based Education Program was designed as a brief, repetitive intervention to heighten breast cancer awareness and knowledge and to stimulate participants to follow recommended screening guidelines. After a brief baseline survey that focused on gathering data related to women's sociodemographic characteristics and their breast cancer knowledge, attitudes, and screening behaviors, the education program began with a brief face-to-face education session. Every woman in the breast cancer arm received the flyer describing the state's free breast cancer screening program for low income women. They were told how to access the program and to have an English speaker make the phone call, since only English and Spanish language lines were available. Along with this flyer, other information was given to expand the women's knowledge of breast cancer, increase their motivation to become screened, and decrease barriers such as fear of the screening. The other arm received an equivalent intervention for prostate cancer. An in-depth, easy-to-read packet of educational materials were mailed to the women's home 2 weeks later. These packets were produced by agencies affiliated with the focus disease and were written in native language when possible. At 4 weeks post-baseline training, phone contact was attempted up to five times to confirm the mailed information had been received and answer any questions that may have arisen since the face-to-face session. At 6 weeks post-baseline

training, a second complementary packet of relevant information was mailed to each participant. Mailings and calls were done by the same student community health educator who had initially recruited and educated the participant at the grocery store (baseline). At 8 weeks post-baseline, a follow-up telephone survey was conducted by a fellow student community health worker who had no previous contact with the participant and did not know into which arm the participant had been randomized. The follow-up survey focused on monitoring changes in breast cancer knowledge, attitudes, and screening behaviors since completion of the baseline.

Recruitment and Consenting of Participants

Twenty Asian grocery stores were recruited as community-based cancer educational sites throughout southernmost California. These stores are culturally aligned with the characteristics of the desired participants [13]. Previous education programs at these sites attracted shoppers who were diverse in age, socioeconomic status, acculturation, and language proficiency [14, 18]. To assure this optimal diversity within the sample, additional Asian grocery stores were recruited for this next phase of the program evaluation. Student health educators held outreach events at these Asian grocery stores throughout the week, at varying times and days in order to increase demographic diversity. Posters in multiple Asian languages attracted women to the exhibit as they entered and exited their Asian grocery store. Modest incentives, such as small candles and vases, were given to women who had consented to participate in the study and completed the baseline survey and brief educational program [13].

Eligibility of Participants

The participants were self-identified Asian females who were at least 20 years of age. Since breast cancer screening promotion is focused on women age 40 and older and since the value of monthly breast self-exams were questioned at the start of the study in 2000, the study placed emphasis on recruiting women aged 40 and older. Students were instructed to first focus on engaging the older women when women of multiple age groups approached the grocery store. While younger women were not the primary focus of this intervention, they were included in the educational program in recognition of the fact that a proportion of breast cancers do occur in younger women. The information would benefit them as they age and they were encouraged to use the acquired knowledge to help influence the older women in their families to undergo breast cancer screening [1].

Randomization of Study Participants and Data Collection

To assess the cancer education program, women were randomized to receive information either about breast cancer or prostate cancer. Computer-generated randomization tables were given to each student health educator to determine the arm into which a participant should be randomly assigned. This occurred only after the participant was recruited to the study, consented, and her baseline data had been collected. Randomization was done immediately after the woman had signed her consent form and completed her baseline survey. Recruitment continued until there were at least 200 women in each of the four main Asian ethnic groups who had completed both baseline and follow-up surveys.

Description of the Sample

From 2000 to 2004, 1,687 women consented to participate in the evaluation of the Asian Grocery Store-Based Breast Cancer Education Program and were randomized to either the intervention group or the control group. The participants from the four largest ethnic groups ($N=1,522$) are analyzed in this study: Chinese ($n=381$); Filipino ($n=414$); Korean ($n=371$); and Vietnamese ($N=356$).

Of the 1,522 women, 813 were randomized to the breast cancer education group and 709 to the prostate cancer education group. The difference in sample sizes was the result of chance randomization. In Table 1, of the women who received information about breast cancer and those who received information about prostate cancer, 527 women (64.8 %) and 448 women (63.2 %), respectively, were reached for follow-up at 8 weeks post-baseline intervention. Women in the breast cancer and prostate cancer arms had similar ages and education levels at both baseline and follow-up. The ethnic groups were distributed evenly between the two arms of the study at baseline with approximately 25 % of each sample being Chinese, Filipino, Korean, and Vietnamese and remained so at follow-up. Most (86 %) of the participants reported English as their second language. Table 1 shows the distribution of women who reported using English as their native language.

Three percent of women in each arm reported that they had spoken to one of the breast cancer educators on a previous trip to the grocery store. This indicates that the program worked in reaching women who were not approached before and hence that nearly all the women in this study were experiencing this intervention for the first time.

Results

This analysis focuses on the women in each study group who were at least 40 years old at baseline ($n=1,160$). Table 2 shows that both study groups had similar mean ages, education levels, and language preferences at baseline and follow-up.

Out of the women aged 40 and older, and hence eligible for mammography screening, there was no statistically significant difference in the number of women at baseline who reported having had a mammogram in the past 12 months: 73 % in both breast cancer ($n=382$) and prostate cancer ($n=305$) arms. Nor was there a statistically significant difference at baseline in participants' adherence to annual clinical breast exam (CBE) guidelines in the same cohort: 74 % ($n=417$) in the breast cancer arm and 77 % (354) in the prostate cancer arm.

Out of the 763 women who were reached for the 8-week follow-up phone call to determine the education intervention's effectiveness in promoting breast cancer screening, 422 (55 %) women were adherent at baseline, having had a mammogram, and a CBE in the past 12 months. The remaining 341 (45 %) were not adherent to those guidelines.

The remainder of this analysis is focused on the impact of the intervention solely on those 341 women in the two study arms who reported baseline non-adherence to guidelines for annual mammography, CBE, or both during the past year. The 87 women in the breast cancer arm and the 72 in the prostate arm who were non-adherent for annual mammography screening at baseline were asked if they had scheduled a mammogram appointment during the 2-month window prior to follow-up. Significantly more non-adherent women in the breast cancer arm ($n=29$) than the prostate cancer arm ($n=14$) reported specifically scheduling a mammogram in that 2-month window ($\chi^2=3.85$, $p=0.05$).

The 97 women in the breast cancer arm and the 64 in the prostate arm who were non-adherent for CBE at baseline were asked if they had scheduled a CBE appointment during the past 2 months. Of the women non-adherent to CBE screening, 16 non-adherent women in the breast cancer arm had scheduled a CBE compared to nine women in the prostate cancer arm by follow-up. While this is a comparable shift to that seen for mammography screening, the difference was not statistically significant ($\chi^2=0.18$, $p=0.68$).

When combining both mammogram and clinical breast exam together to see if there were differences in the rate of scheduling both exams in the two study arms (190 in the breast cancer arm and 151 in the prostate arm), 20 women in the breast cancer arm and 15 women

in the prostate cancer arm reported scheduling both. This was not statistically significant ($X^2=0.01$, $p=0.92$).

Discussion

Using Rogers' description of the continuum of adopters of change [9] from early adopters to late adopters, this study's group of non-adherent women would be considered among the group of late stage adopters of the widely recommended guidelines for annual mammography and CBE among women 40 and older. Late adopters of change are generally considered to be the most difficult group in which to trigger behavioral change [9]. The results from this study showed that the non-adherent women in the intervention group were significantly more likely than the non-adherent women in the control group to report having scheduled a screening mammogram in the 2 months following the intervention.

While a comparable increase in scheduled CBE was also seen in the breast cancer arm, it was not statistically significant. This difference between mammography and CBE appointments is likely explained by the training the program's educators were given. Since the time with each woman would be limited, trainers were instructed to focus first on explaining that: mammography was the most effective method of finding breast cancer in the earliest possible stage; survival rates from early breast cancer detection were exceedingly high with mammography; women could receive a free mammogram in the state's free breast cancer screening program for women with low incomes; and it was easy to schedule a free screening in a neighborhood facility.

In Gladwell's discussion of how tipping points occur [6], he identifies several critical elements that need to be present simultaneously. First, he identifies three kinds of people among the critical elements. In this study, the "maven" is the wise university student who is bringing information from the university to the community; it is a resource that the community trusts and respects. The persona of the grocery stores themselves are the "connectors," the one who knows many people and the right people and has access to them. The students also fill the role of the "salesperson" that Gladwell identified. They are selected for their passion to disseminate this life-saving information and their ease of passionately explaining their hope that through their efforts, Asian women will not die prematurely from breast cancer. Gladwell also identifies the need for a "sticky message." Here the message is sticky: "Get a mammogram yearly and save your life! Live long so you can help your loved ones." Gladwell also notes that changes in the environment were needed to achieve a tipping point. In California, expensive breast cancer screening was suddenly free, young people from the university had begun openly talking about breast cancer control in front of Asian grocery stores throughout the County, and the stores were endorsing the educators' presence.

Delivering information at the Asian grocery store changed the environment and did so in a culturally aligned manner. The Asian grocery stores proved to be an optimal venue for delivering this type of educational intervention because they are places where: (1) it is convenient and acceptable for Asian women to spend a considerable amount of time and they have discretion over how the time was spent and make repeat visits; (2) primarily Asian women of diverse acculturation levels, linguistic preferences and proficiencies, and socioeconomic status congregated; and (3) nearly all of the various Asian cultural subgroups could be reached. The grocery stores were enthusiastic partners, as evidenced by their donation of store space that could otherwise have been rented to independent vendors or used to display the store's own merchandise [10–16, 18, 19].

The study's limitations should be kept in mind when drawing generalizations from these data. The sample may not be representative of all Asian American women since the data

were drawn from a convenience sample of Asian American women recruited only from southernmost California. Furthermore, since the data collection tools were created specifically to assess the educational needs of this particular community and the acceptability of the Asian grocery stores as community education venues, validated standardized instruments were not available to meet this purpose. To keep the data collection brief, it was not possible to include a standardized test to assess the degree to which women's responses were influenced by their desire to give socially desirable answers. The need to keep the survey brief also prevented inclusion of questions that would have further enriched the findings. Due to monetary limitations of this study, the information that participants reported regarding screening adherence could not be verified or if the women actually went to their scheduled appointments. Given these limitations, the reported findings should be applied with caution.

Since this program appears to be somewhat effective in motivating Asian women to set appointments for mammograms, it should be noted that in this study, 27 % of the 1,160 women aged 40 and older were not adherent to the recommended guideline for annual mammography. That percentage is considerably lower than the 42 % of non-adherence for mammography screening reported for all Asian women living in California [2]. This observed difference in screening rates underscores the widely held belief among the scientific community that people who take part in research studies may be different from the public at large. Specifically, those who take part in research studies are usually reported to be better educated, have higher health and science literacy levels, be more adherent to health promoting guidelines, and have more discretionary funds available to protect (or abuse) their health than the public at large [7]. The positive impact of this evidence-based intervention is, therefore, of potentially greater value if the true size of the later adapter population is actually the 42 % of Asian American women reported statewide, rather than the 27 % of non-adherers reported in this study's baseline data.

Conclusion

Securing cancer education sites at Asian grocery stores made it easier to reach the diverse community of Asian American women for the purposes of disseminating vital cancer control information and to recruit those community members to a breast cancer education study. The subsample of Asian American women who were non-adherent to breast cancer screening guidelines at baseline reported significantly greater adherence to mammography screening guidelines after participating in this Asian Grocery Store-Based Education Program. Many factors are likely to have contributed to this success in getting late adopters of breast cancer screening to adopt screening, including integrating the culturally and linguistically aligned cancer education program along the path of their routine activities of daily living, so they will receive repetitive reminders to be screened and reducing financial and transportation barriers to screening.

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Table 1
Demographic baseline and follow-up comparison of breast and prostate cancer arms for women of all ages

All women	BL-BC	BL-PC	FU-BC	FU-PC
Age	<i>n</i> (SD)	<i>n</i> (SD)	<i>n</i> (SD)	<i>n</i> (SD)
Mean (SD)	49.07 (11.97)	47.93 (11.99)	49.56 (11.91)	48.27 (12.02)
Median	48.09	47.99	48.30	48.33
Mode	45	49	44	49
Range	21–101	20–90	22–101	20–90
Education	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
High school or less	269 (33.3)	244 (34.8)	181 (34.6)	160 (36.0)
Some college or vocational school	126 (15.6)	120 (17.1)	85 (16.3)	77 (17.3)
Completed college	303 (37.5)	241 (34.4)	185 (35.4)	143 (32.1)
Graduate school or more	109 (13.5)	96 (13.7)	72 (13.8)	65 (14.6)
Unspecified	6	8	4	3
Full sample	807 (100.0)	701 (100.0)	523 (100.0)	445 (100.0)
Ethnic group	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Chinese	189 (23.2)	192 (27.1)	120 (22.8)	128 (28.6)
Filipino	238 (29.3)	176 (24.8)	140 (26.6)	103 (23.0)
Korean	203 (25.0)	168 (23.7)	126 (23.9)	98 (21.9)
Vietnamese	183 (22.5)	173 (24.4)	141 (26.8)	119 (26.6)
Full sample	813 (100.0)	709 (100.0)	527 (100.0)	448 (100.0)
English as the native language	<i>n</i> (%) ^a	<i>n</i> (%) ^a	<i>n</i> (%) ^a	<i>n</i> (%) ^a
Chinese	25 (3.1)	26 (3.7)	12 (2.3)	19 (4.3)
Filipino	56 (6.9)	46 (6.5)	32 (6.1)	24 (5.4)
Korean	28 (3.5)	20 (2.8)	11 (2.1)	12 (2.7)
Vietnamese	4 (0.5)	4 (0.6)	3 (0.6)	2 (0.4)
Total	113 (14.0)	96 (13.6)	58 (11.1)	57 (12.8)

BL baseline, *FU* follow-up, *BC* breast, *PC* prostate

^aPercentage from total

Table 2
Demographic baseline and follow-up comparison of breast cancer and prostate cancer arms for women aged 40 and older

Women aged 40 and older	Baseline		Follow-up	
	Breast	Prostate	Breast	Prostate
Age	<i>n</i> (SD)	<i>n</i> (SD)	<i>n</i> (SD)	<i>n</i> (SD)
Mean (SD)	53.14 (9.97)	52.88 (9.26)	53.28 (10.16)	53.09 (9.40)
Median	51.43	51.02	51.63	51.29
Mode	45	49	44	49
Range	40–101	40–90	40–101	40–90
Education	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
High school or less	239 (38.1)	207 (39.8)	165 (39.4)	138 (40.9)
Some college or vocational school	95 (15.2)	83 (16.0)	68 (16.2)	53 (15.7)
Completed college	230 (36.7)	178 (34.2)	146 (34.8)	111 (32.9)
Graduate school or more	63 (10.0)	52 (10.0)	40 (9.5)	35 (10.4)
Unspecified	5	8	4	3
Full sample	627 (100.0)	520 (100.0)	419 (100.0)	337 (100.0)
Ethnic group	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Chinese	150 (23.7)	130 (24.6)	99 (23.4)	87 (25.6)
Filipino	201 (31.8)	156 (29.5)	123 (29.1)	91 (26.8)
Korean	133 (21.0)	115 (21.8)	85 (20.1)	70 (20.6)
Vietnamese	148 (23.4)	127 (24.1)	116 (27.4)	92 (27.1)
Full sample	632 (100.0)	528 (100.0)	423 (100.0)	340 (100.0)
English as the native language	<i>n</i> (%) ^a	<i>n</i> (%) ^a	<i>n</i> (%) ^a	<i>n</i> (%) ^a
Chinese	20 (3.2)	15 (2.9)	11 (2.7)	12 (3.6)
Filipino	49 (7.8)	39 (7.4)	28 (6.8)	20 (6.0)
Korean	18 (2.9)	16 (3.0)	7 (1.7)	9 (2.7)
Vietnamese	3 (0.5)	2 (0.4)	2 (0.5)	1 (0.3)
Total	90 (14.3)	72 (13.7)	48 (11.6)	42 (12.7)

^aPercentage from total